UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF MICHIGAN

JEANNA NORRIS, on behalf of herself and all others similarly situated, Plaintiffs, vs. PRESIDENT SAMUEL L. STANLEY, JR., in his official capacity as President of Michigan State University; DIANNE BYRUM, In her official capacity as Chair of the Board of Trustees, DAN KELLY, in his official capacity as Vice Chair of the Board of Trustees; and RENEE JEFFERSON, PAT O'KEEFE, BRIANNA T. SCOTT, KELLY TEBAY, and REMA VASSAR in their official capacities as Members of the Board of Trustees, Defendants.	)	Case No. 1:21-cv-00756

REBUTTAL DECLARATION OF MARCUS ZERVOS, M.D.

1. I have reviewed the second declaration of Dr. Hoorman Noorchashm, dated September 15, 2021 and updated September 16, 2021. ECF Nos. 11-3 & 12. I have also reviewed Plaintiff's Reply Brief in Support of Motion for a Preliminary Injunction. ECF No. 11-2.

2. This declaration reflects my response to the opinions and assertions expressed in those documents.

3. Ms. Norris references an opinion piece by Dr. Marty Makary to support her view that the CDC has exhibited "ineptitude throughout the pandemic." ECF No. 11-2, PageID.569. I disagree with Dr. Makary. The CDC acts on the best available scientific evidence, and for vaccine recommendations relies on a very transparent process that includes the relevant research,

FDA review, and review and recommendations by the Advisory Committee on Immunization Practices (ACIP) panel of the CDC. All these agencies have a combination of experts in the field with relevant and complimentary areas of expertise. I also note that Dr. Makary published another opinion piece in the Wall Street Journal back in February predicting that "We'll have Herd Immunity by April." Marty Makary, *We'll Have Herd Immunity by April*, Wall St. J. (Feb. 18, 2021, 12:35 PM), https://www.wsj.com/articles/well-have-herd-immunity-by-april-11613669731. As of September, the United States still has not achieved herd immunity. Instead, we continue to experience extremely high rates of COVID-19 infection and death.

4. Dr. Makary further describes the non-peer reviewed Israeli study (Gazit study) as "powerful" and "rigorous." ECF No. 11-2, PageID.570. As described in my initial declaration, this study's numerous flaws and deficiencies make it not usable for public health or individual patient care decisions. The strength and significance of the Kentucky CDC study referenced by Dr. Makary were also addressed in my prior declaration and discussed further below.

5. I disagree with Ms. Norris that "immunity is immunity is immunity," ECF No. 11-2, PageID.575, particularly as it pertains to preventing the spread of COVID-19. As I outlined in my prior declaration and below, there is much stronger evidence of the effectiveness of vaccines versus natural immunity at generating an antibody response that is effective at reducing the risk of reinfection in individuals previously infected with COVID-19 and reducing transmission of COVID-19. Unlike natural immunity, the studies of the vaccines' effectiveness is not based only on presence of antibodies, and, as I discuss below, other studies show that the antibody response from natural immunity does not generate as much protection from COVID-19 as the vaccines do. It is important to recognize that antibody testing is not recommended by the CDC or FDA to assess immunity, as it is not possible using conventional antibody tests to

determine whether a protective immune response has developed. The level of antibody or other markers of immune function that are needed for protection are not known.

6. I agree that simply possessing higher serum antibody levels does not translate into prevention of infection. ECF No. 11-2, PageID.577. However, mere presence of an antibody, such as Ms. Norris demonstrated in August of 2021, also does not translate into prevention of infection. There are a variety of other factors that are of importance in prevention of infection. As outlined in my earlier declaration to the Court and below, these include exposures, behavioral factors, and clinical experience. It is incorrect to say that reinfection is rare, as it has been reported in up to 10 percent of people with prior infection, as described in my prior declaration and below. ECF No. 9-1, PageID.410-411. How often reinfection actually occurs is difficult to ascertain as earlier studies have too short of follow up time, are retrospective and observational, have difference in risk factors and exposures in groups, or do not do the testing or strain analysis and clinical analysis needed to properly ascertain how often reinfection happens. This is particularly important with asymptomatic individuals where reinfection can occur. This will not be recognized in retrospective observational studies. The consequence of these infections can be devastating as the infection can spread to others.

7. The vaccines MSU are accepting as evidence of immunization are endorsed for use by the WHO or FDA. All vaccines have varying efficacy demonstrated in the clinical trials and real-world experience, depending on virus strains and population studied. But all vaccinations are of benefit against disease to have gained WHO or FDA acceptance.

8. Multiple studies indicate that the duration of natural immunity is not completely known and varies from individual to individual. However, it is not disputable that various studies show some patients do not develop an antibody response at all, or antibody levels can drop off

quickly or be ineffective. It also is still unknown whether or how significantly antibodies developed in response to COVID-19 infection from one virus strain will protect an individual with respect to a different strain of COVID-19. So even if Ms. Norris were positive for antibody in August 2021, it does not mean that level of antibody is protective against delta variant, or is even present today. Since her infection was months earlier, when the delta variant was not present, there can be no reliance that the antibody she may have is protective. It is correct that antibody levels can fall in vaccinated individuals, this is being evaluated in ongoing studies and by the FDA to evaluate need for boosters in some patients. Whether boosters are needed and in whom is an area of ongoing debate and scientific inquiry, and the FDA recommendations will shape public health policy. It is correct that all arms of the immune system are important in immunity, however the role of cellular (T and B cells) for COVID-19 prevention is not known. SARS-Co-V2 is a coronavirus, similar to SARS and other coronaviruses in some ways. We have learned much about these viruses over the last several decades and know that reinfections with these agents occur commonly and are seasonal. Coronaviruses include the common cold which not only occur very commonly, but for which we also know that cellular immunity has little role in protection. Just because someone has had an infection does not mean they are protected indefinitely, there are many examples of that for a variety of infections.

9. The reason for vaccination is to protect the individual from serious infection from COVID-19 and to protect the spread to others. *Contra* ECF No. 12, PageID.610 ¶ 1. Vaccination is our best measure to control COVID-19 and save lives. As of September 15, 2021, there were 983,109 cases of COVID-19 and 20,597 deaths. Michigan remains in an area of high transmission with multiple daily outbreaks occurring including on college campuses. There are a variety of short and long-term complications of COVID-19 that affect all ages. One in three

people with COVID-19 infection have long duration symptoms. Kyle Yomogida et al., *Post-Acute Sequelae of SARS-CoV-2 Infection Among Adults Aged ≥ 18 Years – Long Beach, California, April 1—December 10, 2020*, (Sept. 17, 2021), https://www.cdc.gov/mmwr/volumes/70/wr/pdfs/mm7037a2-H.pdf. There is very clear consensus and evidence that the risk of vaccine is less than infection. There is also clear consensus that secondary transmission is common in a variety of settings and is less with vaccine than in people that are infected and not vaccinated. Victoria Chu et al., Letter to the Editor, N. ENG. J. MED. (Sept. 2, 2021) https://www.nejm.org/doi/pdf/10.1056/NEJMc2031915?articleTools=true; Ross J. Harris et al., Letter to the Editor, N. ENG. J. MED. (Aug. 19, 2021) https://www.nejm.org/doi/full/10.1056/NEJMc2107717; Anoop S.V. Shah et al., Letter to the Editor, N. ENG. J. MED. (Sept. 8, 2021) https://www.nejm.org/doi/full/10.1056/NEJMc2106757; Monica Gandhi et al., *Asymptomatic Transmissions, the Achilles' Heel of Current Strategies to Control Covid-19*, N. ENG. J. MED. (May 28, 2020) https://www.nejm.org/doi/pdf/10.1056/NEJMe2009758?articleTools=true; Hannah Fung et al., *The household secondary attack rate of SARA-CoV-2: A rapid review*, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7665336/pdf/ciaa1558.pdf (last accessed Sept. 17, 2021).

10. It is not merely an assumption that natural immunity is inferior to that acquired through vaccination. ECF No. 12, PageID.610 ¶ 3-8. There is clear evidence that the immune response in a vaccinated person is more robust than in someone with immunity from an infection. Several studies have compared the strength of antibodies in blood from people who were vaccinated with those who previously had COVID-19. For instance, a study by researchers

from Emory University and the University of Texas Medical Branch published last March showed immune response in vaccinated individuals to be almost ten times greater than in someone who had recovered from infection. Venkata Viswanadh et al., *Neutralizing Antibodies Against SARS-CoV02 Variants After Infection and Vaccination*, (Mar. 19, 2021) https://jamanetwork.com/journals/jama/fullarticle/2777898. The same study also found that the immune response in someone who had previously had COVID-19 was about twice as variable as compared with the response in someone who had not previously had COVID-19 but was vaccinated. In fact, a number of people who even had symptomatic COVID-19 illness when the study was occurring did not mount a measurable immune response at all.

11. Not everyone with COVID-19 develops antibodies after natural infection and a very large study involving over 30,000 cases found that even in those with an antibody response that is persistent, only about 90% of those that had an antibody response developed immunity. Weimin Liu et al., *Predictors of Nonseroconversion after SARS-CoV-2 Infection*, (June 30, 2021), https://wwwnc.cdc.gov/eid/article/27/9/21-1042_article; Ania Wajnberg et al., *Robust neutralizing antibodies to SARS-CoV-2 infection persists for months*, SCIENCE (Dec. 4, 2020), https://www.science.org/doi/10.1126/science.abd7728. Also, the likelihood of mounting a strong antibody response is related to the severity of disease. In a study looking at the relationship of antibodies to disease severity, only 12 out of 15 (80%) asymptomatic patients showed detectable levels of neutralizing antibodies, compared with 46 out of 49 (94%) patients with mild cases and 100% of patients with pneumonia. Jae-Hoon Ko, et al., *Neutralizing Antibody Production in Asymptomatic and Mild COVID-19 Patients, in Comparison with Pneumonic COVID-19 Patients*, (July 17, 2021), https://www.mdpi.com/2077-0383/9/7/2268. This compares with 100% antibody response to vaccination in the COVID-19 mRNA vaccine studies, and over 94

percent initial efficacy in the mRNA vaccine studies. Pinja Jalkanen et al., *COVID-19 mRNA vaccine induced antibody responses against three SARS-CoV-2 variants*, (June 28, 2021), https://www.nature.com/articles/s41467-021-24285-4; Fernando P. Polack et al., *Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine*, N. ENG. J. MED. (Dec. 10, 2020) https://www.nejm.org/doi/full/10.1056/NEJMoa2034577; Lindsey R. Baden et al., *Efficacy and Safety of the mRNA-1273 SARS-CoV-2 Vaccine*, N. ENG. J. MED. (Dec. 30, 2020) https://www.nejm.org/doi/full/10.1056/nejmoa2035389;

12. Also, as outlined in my prior declaration, the duration of a previously infected individual's immune response is variable. ECF 9-1, PageID.412 ¶ 49. *See also*, Alexis R. Demonbreun, et al., *Patterns and persistence of SARS-CoV-2 IgG antibodies in Chicago to monitor COVID-19 exposure*, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7685344/pdf/nihpp-2020.11.17.20233452.pdf (last visited Sept. 17, 2021). This study by Demonbreun also showed that recovering from COVID-19 does not guarantee antibodies or confer immunity to reinfection. Their finding directly contradicts the assumption that contracting COVID-19 will make someone immune to reinfection. For people who had mild or asymptomatic disease, their antibody response was essentially the same as someone who had not been previously exposed.

13. With the rise of genetically distinct strains of SARS-CoV-2, there is also the possibility that some strains of the virus will "evade" the immune response acquired from a natural infection. Vaccination of people previously infected with SARS-CoV-2 increased the immune response to the new variant by approximately 1000 times. Leonida Stamatatos et al., *mRNA vaccination boosts cross-variant neutralizing antibodies elicited by SARS-CoV-2 infection*, SCIENCE (June 25, 2021) https://www.science.org/doi/10.1126/science.abg9175.

14. Therefore, so-called hybrid immunity — that is, natural immunity from an infection combined with the immunity provided by the vaccine — appears to result in stronger protection than just infection. Against some of the most concerning variants, it is literally 1000 times better levels of antibodies after vaccination compared to before for somebody with natural immunity. That is not a small difference, especially when we know natural immunity is not as effective as vaccination at protecting against COVID-19.

15. Vaccination has also led to increased levels of antibodies against variant forms of the coronavirus in people who had been previously infected with other strains. Han C. Leier, et al., *Previously infected vaccinees broadly neutralize SARS-CoV-2 variants*, https://www.medrxiv.org/content/10.1101/2021.04.25.21256049v1 (last viewed Sept. 17, 2021). Importantly, antibody levels are variable after recovering from infections, and those at the lower end of the spectrum might be more susceptible to reinfections.

16. Researchers at Rockefeller University in New York City also looked at how different types of immunity would protect against potential variants. To do so, they designed a modified version of the coronavirus spike protein with 20 naturally occurring mutations to test how antibodies would work against it. Fabian Schmidt et al., *High genetic barrier to escape from human polyclonal SARS-CoV-2 neutralizing antibodies*, https://www.biorxiv.org/content/10.1101/2021.08.06.455491v1 (last accessed Sept. 17, 2021). These modified spike proteins were tested in lab dishes against antibodies from people who had recovered from COVID-19, from those who had been vaccinated, and from those who had hybrid immunity. The spike proteins were able to evade the antibodies from the first two groups but not antibodies from people with hybrid immunity.

17. In response to Dr. Noorchashm's statement that **"**when assessing the clinical *equivalency* of vaccination vs. natural infection, the only metric that can correctly be used is the said group's *clinical susceptibility to subsequent COVID-19 infection*," (ECF No. 12, PageID.611 ¶ 4), I agree that susceptibility to infection is one appropriate metric, along with prevention of serious disease. There is clear evidence that the vaccines have remained highly effective in preventing hospitalization and death. New studies become available every day, several new studies show evidence of long-term safety and efficacy of the vaccine.

18. I disagree that it is "incorrect and irrelevant to claim that any *additional* level of protection afforded the subset/class of COVID-recovered persons by an added vaccination justifies a mandate." ECF No. 12, PageID.611 ¶ 6. The mandate is justified on basis of prevention of infection and reinfection. As I have explained, previously infected individuals can be reinfected with COVID-19 and spread it to others. Reinfection can have an impact on the health of oneself, but of relevance for the mandate is that infection, through transmission, can have serious health implications for others.

19. Dr. Noorchashm cites the Goldberg, et al., study to support his statement that "it is a serious scientific, analytical and clinical error to conflate increase in antibody levels with the unsubstantiated theory that vaccination of COVID-recovered individuals is needed to achieve immunity equivalent to that attained through vaccination of COVID-naïve persons." ECF No. 12, PageID.612 ¶ 8-12. This study has not yet been peer reviewed and is subject to numerous flaws. Most importantly, it is retrospective and observational, and there was a short-term evaluation for possible reinfection. Also, there are behavioral (such as distancing and masks), population (level of transmission in the community), and potential patient risk factor differences (such as underlying disease) that were not accounted for. Also, there may have been different

levels of exposure to infection between the vaccinated and non-vaccinated groups that result in infection or risk of acquisition that was not accounted for. There were also testing differences not accounted for between groups.

20. Dr. Noorchashm cites the study by Shrestha *et. al*. to support the claim of no reinfections in individuals with prior COVID-19. ECF No. 12, PageID.613 ¶ 13-14. This was an observational study in the context of occupational health, set at the Cleveland Clinic. This study is not peer reviewed. Its most important flaw is lack of asymptomatic or mild infection employee screening, such that previously infected subjects who remained asymptomatic might have been misclassified as previously uninfected. The study duration was also short (only 5 months).

21. Dr. Noorchashm also cites a study by Lumley, *et al*. ECF No. 12, PageID.614 ¶ 15-17. This was also an observational study. Its weaknesses include differences in risk of infection between groups, such as exposures, underlying disease, inconsistent testing methodology between groups, and short follow-up period. There are numerous studies showing reinfection can occur in up to 10 percent of individuals with prior infection as outlined in my prior declaration. ECF No. 9-1, PageID.410-411 ¶ 46. *See also*, Alison Tarke, et al., *Comprehensive analysis of T cell immunodominance and immunoprevalence of SARS-CoV-2 epitopes in COVID-19 case*, (Jan. 26, 2021) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7837622/; Richard L. Tillett et al., *Genomic evidence for reinfection with SARS-CoV-2: a case study*, https://www.thelancet.com/action/showPdf?pii=S1473-3099%2820%2930764-7 (last accessed Sept. 17, 2021); Jan Van Elslande et al., *Symptomatic SARS-CoV-2 reinfection by a phylogenetically distinct strain*, (Sept. 5, 2020) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7499557/; Belén Prado-Vivar et al., *A case of*

SARS-CoV-2 reinfection in Ecuador, (Nov. 23, 2020) https://www.thelancet.com/action/showPdf?pii=S1473-3099%2820%2930910-5; Jae-Hoon Ko, et al., *Neutralizing Antibody Production in Asymptomatic and Mild COVID-19 Patients, in Comparison with Pneumonic COVID-19 Patients*, (July 17, 2020) https://www.mdpi.com/2077-0383/9/7/2268.

22. The Kentucky study does in fact justify that individuals with naturally acquired immunity receive a vaccine. The mandate is a separate question but related issue. ECF No. 12, PageID.614 ¶ 18. My understanding of the significance of the study is correct that, along with other information, the study provides evidence that reinfection is more common in people that have natural infection vs. immunization. The evidence provided by the CDC report shows vaccinated people are less likely to experience a breakthrough infection than people with a prior infection are to get COVID-19 a second time. According to the CDC report, we have direct evidence. Researchers collected data on people in Kentucky who were infected by SARS-CoV-2 in 2020 and then infected *for the second time* in May and June of 2021. These data were compared with people who had also been infected in 2020, but not reinfected. Whereas only 27.2% of the people who were reinfected had been vaccinated, 42.5% of people in the comparison group had been vaccinated. From these data, the researchers determined that the odds of a person being reinfected if they haven't had the vaccine are 2.34 times greater than those of a person who got the vaccine after recovering from COVID-19. Larger studies are needed. However, in making medical and public health decisions, the entire body of experience and literature needs to be considered.

23. In contrast to Dr. Noorchashm's reliance on the Satwik, *et al.* small observational study (ECF No. 12, PageID.616 ¶ 24), there have been numerous studies showing long term

efficacy of the vaccines in preventing hospitalization and death from COVID-19. In addition to the prior citations in my earlier declaration, almost daily there are new large studies showing the safety and efficacy of the vaccines. The following are a few examples of large studies not cited previously: Kristina L. Bajema et al., *Effectiveness of COVID-19 mRNA Vaccines Against COVID-19-Associated Hospitalization—Five Veterans Affairs Medical Centers, United States, February 1 – August 6, 202*, CDC (Sept. 17, 2021), https://www.cdc.gov/mmwr/volumes/70/wr/mm7037e3.htm; Heather M. Scobie, et al., *Monitoring Incidence of COVID-19 Cases, Hospitalizations, and Deaths, by Vaccination Status – 13 U.S. Jurisdictions, April 4 – July 17, 2021*, CDC (Sept. 17, 2021), https://www.cdc.gov/mmwr/volumes/70/wr/mm7037e1.htm; Shaun J. Grannis et al., *Interim Estimates of COVID-19 Vaccine Effectiveness Against COVID-19—Associated Emergency Department or Urgent Care Clinic Encounters and Hospitalizations Among Adults During SARS-CoV-2 B.1.617.2 (Delta) Variant Predominance –Nine States, June—August 2021*, CDC (Sept. 17, 2021), https://www.cdc.gov/mmwr/volumes/70/wr/mm7037e2.htm; Robert W. Frenck, et al., *Safety, Immunogenicity, and Efficacy of the BNT162b2 Covid-19 Vaccine in Adolescents*, N. ENG. J. MED. (July 15, 2021), https://www.nejm.org/doi/full/10.1056/NEJMoa2107456.

24. It is of interest that Dr. Noorchashm cites Dr. Paul Offit in his declaration. ECF No. 12, PageID.618-619 ¶ 30-31. I have reviewed Dr. Offit's podcasts. Of note, Dr. Offit has acknowledged that the choice to not get vaccinated affects others. Conversations on Health Care, *"A New Era of Vaccinology": Dr. Paul Offit on mRNA Technology's role in Vaccine Development*, FEDERAL NEWS NETWORK, at 03:50 (July 8, 2021) https://federalnewsnetwork.com/conversations-on-healthcare/2021/07/a-new-era-of-vaccinology-

dr-paul-offit-on-mrna-technologys-role-in-vaccine-development/. Dr. Offit does not state to not vaccinate individuals with prior infection. ZdoggMD, *Vaccine Update & Q+A LIVE w/ Dr. Paul Offit*, YOUTUBE (July 20, 2021) https://www.youtube.com/watch?v=v8eOQSRVh_s&t=460s. Dr. Offit says that getting a vaccine after COVID-19 infection is safe and boosts immunity. *Id*. at 16:10-16:32. He is also in support of vaccination mandates. He states, "What do you do if 60 or 70 or 80 million people in this country say 'No thanks. I'm going to continue to allow this virus to reproduce itself, continue to allow people to suffer and be hospitalized and die, and continue to allow variants to be made which may become progressively more resistant to vaccine-induced immunity.' What do you do then? And I think the answer to that question is you compel vaccinations, you mandate vaccines." *Id*. at 23:05-23:31.

25. That two large health systems in the US have elected to accept a history of COVID-recovery and acquired antibody immunity as grounds for exemption from a vaccine requirement is irrelevant, as many hospitals and universities have accepted the importance of mandates that do not exempt previously infected individuals and implemented them in the best interest of students, staff and for hospitals and their patients. Mandates are increasingly recommended by public health experts.

26. The justification to vaccinate Ms. Norris and others with prior COVID-19 infection is to protect her and others around her. The vaccines are safe and effective and are highly effective in preventing hospitalization and death. They also decrease the risk that an individual previously infected with COVID-19 will be reinfected and transmit it to others. Rare potential side effects such as myocarditis or clotting are more commonly seen in people that have natural infection than in those who receive the vaccine. Boosters are being now consider by the FDA and AACIO because of the potential for waning immunity in some people. However, as

stated earlier, all vaccines remain highly effective in preventing serious infection, hospitalization, and death. It is not unusual to have to re-immunize, which is why influenza (another respiratory virus) requires us giving flu shots annually.

27. Dr. Noorchashm cites a new study in *Nature* for his opinion that Ms. Norris is at heightened risk of side effects from the vaccine. ECF No. 12, PageID.623 ¶ 51-54. That study has not been confirmed by other studies and has limitations of a relatively small sample size and issues with the matching procedures, and thus results in incorrect conclusions and does not represent the overall population. In addition, they studied COVID-19 infected individuals who were mildly symptomatic, with relatively low pre-vaccination antibody levels, so it does not address individuals with previously moderate and severe COVID-19 infections. Finally, their study did not include information on cell-mediated immunity responses, which would provide further insight regarding the immune response, especially in post-infected seronegative individuals. The authors themselves concluded that whether their safety conclusions could be generalized to previously moderate and severe COVID-19 infected patients has yet to be determined.

28. The safety of the vaccine is well demonstrated even in people with prior infection. ACIP confirmed that the CDC had considered the effect of the Pfizer-BioNTech COVID-19 vaccine on those previously infected with COVID-19 and that secondary analysis showed that the vaccine's efficacy was similarly high for participants both with or without evidence of a previous COVID-19 infection. Sara E. Oliver, M.D., et al., The Advisory Committee on Immunization Practices' Interim Recommendation for Use of Pfizer-BioNTech COVID-19 Vaccine — United States, December 2020, Vol. 69, No. 50 (Dec. 18, 2020), and *Erratum* (Jan. 29, 2021), https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6950e2-H.pdf;

https://www.cdc.gov/mmwr/volumes/70/wr/mm7004a5.htm?s_cid=mm7004a5_w. Even people with prior COVID-19 with long haul symptoms in some studies have shown improvement from the vaccine, but at minimum no harm. If any symptoms do occur after vaccination in someone with prior COVID-19, the symptoms are mild and transient.

29. There is strong consensus in the public health and medical community to vaccinate all eligible individuals, including those with prior infection. The recommendation for vaccination of persons with prior COVID-19 infection comes from majority of leading public health experts including the WHO, CDC, ACIP, and national societies. Some examples are as follows:

- World Health Organization. "Even if you have already had COVID-19, you should be vaccinated when it is offered to you. The protection that someone gains from having COVID-19 will vary from person to person, and we also don't know how long natural immunity might last." World Health Organization, *Coronavirus disease (COVID-19): Vaccines*, https://www.who.int/news-room/q-a-detail/coronavirus-disease-(covid-19)-vaccines?adgroupsurvey={adgroupsurvey}&gclid=Cj0KCQjw1ouKBhC5ARIsAHXNMI8e7Ph3bZlLhPpxOhgl4Ib4IBMH7wfm5O6460Cd8awLTK_rFVHe7PkaApelEALw_wcB (last updated June 22, 2021).
- CDC. "Should I be vaccinated after COVID? Yes, you should be vaccinated regardless of whether you already had COVID-19 because: Research has not yet shown how long you are protected from getting COVID-19 again after you recover from COVID-19. Vaccination helps protect you even if you've already had COVID-19." CDC, *Frequently Asked Questions about COVID-19 Vaccination*, https://www.cdc.gov/coronavirus/2019-

ncov/vaccines/faq.html?s_cid=11572:vaccine%20after%20covid%20infection:sem.ga:p:RG:GM:gen:PTN.Grants:FY21 (last updated Sept. 9, 2021).

- "If you have had COVID-19 before, please still get vaccinated," CDC Director Rochelle Walensky said in a statement. "This study shows you are twice as likely to get infected again if you are unvaccinated. Getting the vaccine is the best way to protect yourself and others around you, especially as the more contagious delta variant spreads around the country." CDC Media Statement, *New CDC Study: Vaccination Offers Higher Protection than Previous COVID-19 Infection*, (Aug. 6, 2021) https://www.cdc.gov/media/releases/2021/s0806-vaccination-protection.html.

- American Medical Association. "Yes, even if you have already had COVID-19 you should be vaccinated. Experts do not yet know how long you are protected from getting sick again after recovering from COVID-19." American Medical Association Press Release, *AMA in support of COVID-19 vaccine mandates for health care workers*, (July 26, 2021) https://www.ama-assn.org/press-center/press-releases/ama-support-covid-19-vaccine-mandates-health-care-workers; American Medical Association, *COVID-19 vaccines patients' frequently asked questions*, https://www.ama-assn.org/delivering-care/public-health/covid-19-vaccines-patients-frequently-asked-questions (last accessed Sept. 17, 2021).
- The Infectious Diseases Society of America. "[T]here are accumulating data that vaccination after prior infection can boost immune responses against SARS-CoV-2 variants of concern." Infectious Diseases Society of America, *Vaccines FAQ*, (last

reviewed Sept. 16, 2021), https://www.idsociety.org/covid-19-real-time-learning-network/vaccines/vaccines-information--faq/#.

- American Academy of Pediatricians. "The AAP recommends COVID-19 vaccinations for all children and adolescents 12 years of age and older who do not have contraindications using a COVID-19 vaccine authorized for use for their age." Committee on Infectious Diseases, *COVID-19 Vaccines in Children and Adolescents*, OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS (May 12, 2021), https://pediatrics.aappublications.org/content/148/2/e2021052336.

30. In conclusion, I strongly disagree with Dr Noorchashm that mandating vaccination of individuals with naturally acquired immunity violates principles of medical ethics or standard of care. The adverse effects of vaccine are clearly less than infection, that is not a disputable point. I am a frontline infectious disease physician caring for or supervising the care of hundreds of COVID-19 patients. I have seen first-hand the devastating effects the virus has had on lives of infected individuals, friends, families, caregivers and various first responders. In medicine, we weigh risks and benefits, and the benefits of vaccine including those previously with natural infection outweigh the risks. In summary, as stated in my earlier declaration, if Ms. Norris were my patient, I would recommend vaccination to her. It is in the best interest of her health and those around her. It is commendable that MSU is doing all it can to protect its students and staff from this potentially deadly disease.

I hold all the above opinions to a reasonable degree of professional certainty and probability based upon the records and information that I reviewed and based upon my education, training, and professional experience. My opinions in this report are based on only the information that I have considered to date. I reserve the right to amend and supplement this report and any of my opinions in it consistent with all applicable procedural rules.

Date: 9/20/2021

Marcus Zervos, M.D.